WHAT IS CLAIMED IS:

1. A light-transmitting apparatus for demultiplexing an input signal completing wavelength division multiplexing into wavelength components with wavelengths different from each other and for transmitting each of said wavelength components through a transmission line provided for transmission of said wavelength component, said light-transmitting apparatus comprising:

a wavelength-count-detecting unit for detecting the number of wavelengths of wavelength components included in said input signal and determining whether the number of wavelengths is normal or abnormal;

a plurality of identifier-detecting units each associated with one of said wavelength components and used for determining whether or not an identifier set in one of said wavelength components that has said associated wavelength is normal; and

a judgment unit for forming a judgment on existence of an error for each of said wavelength components on the basis of a detection result output by said wavelength-count-detecting unit and a detection result output by said identifier-detecting unit associated with said wavelength component.

2. A light-transmitting apparatus according to claim 1 wherein, if said wavelength-count-detecting unit outputs a normal result of detection but at least a particular one of said identifier-detecting units outputs an abnormal result of detection, said judgment unit determines that an identifier of one of said wavelength components that is associated with said particular identifier-detecting unit is abnormal.

3. A light-transmitting apparatus according to claim 2 wherein, if said wavelength-count-detecting unit outputs an abnormal result of detection, said judgment unit determines that an optical input of one of said wavelength components is down.

4. A light-transmitting apparatus for demultiplexing an input signal completing wavelength division multiplexing into wavelength components with wavelengths different from each other and for transmitting each of said wavelength components through a transmission line provided for transmission of said wavelength component, said light-transmitting apparatus comprising:

a power comparator for comparing a light power of each of said wavelength components with a power of another one of said wavelength components to form a

judgment as to whether or not said powers of said wavelength components are abnormal;

a plurality of identifier-detecting units each associated with one of said wavelength components and used for determining whether or not an identifier set in one of said wavelength components that has said associated wavelength is normal; and

a judgment unit for forming a judgment on existence of an error for each of said wavelength components on the basis of a detection result output by said power comparator and a detection result output by said identifier-detecting unit associated with said wavelength component.

5. A light-transmitting apparatus according to claim 4 wherein said power comparator compares a light power of each of said wavelength components with a power of an adjacent one of said wavelength components to form a judgment as to whether or not said powers of said wavelength components are abnormal;

6. A light-transmitting apparatus according to claim 4 wherein, if said power comparator outputs a normal result of detection but at least a particular one of said identifier-detecting units outputs an abnormal result of detection, said judgment unit determines that

an identifier of one of said wavelength components that is associated with said particular identifier-detecting unit is abnormal.

7. A light-transmitting apparatus according to claim 6 wherein, if said power comparator outputs an abnormal result of detection, said judgment unit determines that an optical input of one of said wavelength components is down.

8. A light-transmitting apparatus for multiplexing input signals into a multiplexed signal and transmitting said multiplexed signal, said light-transmitting apparatus comprising:

a plurality of receiving units for receiving said input signals from a plurality of transmission lines and for converting said input signals into optical signals having wavelengths different from each other;

a plurality of light-power-detecting units for forming judgments as to whether or not light powers of said optical signals output by said receiving units are abnormal;

a multiplexing unit for multiplexing said optical signals output by said receiving units;

an OSNR-detecting unit for detecting signal-to-noise ratios of wavelength components included in a

multiplexed signal output by said multiplexing unit and for forming a judgment as to whether or not the magnitude of a noise included in each of said wavelength components is abnormal; and

a judgment unit for forming a judgment on an error for each of said wavelength components on the basis of detection results received from said light-power-detecting units and a detection result received from said OSNR-detecting unit.

9. A light-transmitting apparatus according to claim 8, further comprising a variable optical filter passing on only said multiplexed signal's wavelength component having a wavelength in a pass band set in said variable optical filter, wherein said OSNR-detecting unit detects a signal-to-noise ratio of said wavelength component passed on by said variable optical filter.

10. A light-transmitting apparatus according to claim 9 wherein said OSNR-detecting unit detects said signal-to-noise ratio of any particular one of said wavelength components on the basis of a light power of a signal light output by said variable optical filter set at a pass band having a peak-output wavelength coinciding with an intermediate wavelength between a peak-output wavelength of a signal-light level of said particular

wavelength component and a peak-output wavelength of a signal-light level of one of said wavelength components that is adjacent to said particular wavelength component.

11. A light-transmitting apparatus according to claim 9 wherein said OSNR-detecting unit detects said signal-to-noise ratio of any particular one of said wavelength components on the basis of a noise level and a light power of a signal light output during an in-service state by said variable optical filter set at a pass band coinciding with a wavelength band of said particular wavelength component where said noise level is defined as a light power of a signal light output prior to said in-service state by said variable optical filter set at said pass band coinciding with said wavelength band of said particular wavelength component.

12. A light-transmitting apparatus according to claim 9 wherein said OSNR-detecting unit detects said signal-to-noise ratio of any particular one of said wavelength components on the basis of:

a light power of a signal light output by said variable optical filter set at a pass band having a peak-output wavelength coinciding with an intermediate wavelength between a peak-output wavelength of a signal-light level of said particular wavelength component and a

peak-output wavelength of a signal-light level of one of said wavelength components that is adjacent to said particular wavelength component; and

a light power of a signal light output by said variable optical filter set at a pass band having a peak-output wavelength coinciding with a peak-output wavelength of a signal-light level of said particular wavelength component.

13. A light-transmitting apparatus according to claim 9 wherein said judgment unit determines that a particular one of said wavelength components has deteriorated if detection results output by said light-power-detecting unit for said wavelength components are normal but a detection result output by said OSNR-detecting unit for said particular wavelength component is abnormal.

14. A light-transmitting apparatus for multiplexing input signals into a multiplexed signal and transmitting said multiplexed signal, said light-transmitting apparatus comprising:

a plurality of receiving units for receiving said input signals from a plurality of transmission lines and for converting said input signals into optical signals having wavelengths different from each other;

a plurality of light-power-detecting units for forming judgments as to whether or not light powers of said optical signals output by said receiving units are abnormal;

a multiplexing unit for multiplexing said optical signals output by said receiving units;

a noise-adding unit for adding a noise to each of wavelength components included in a multiplexed signal output by said multiplexing unit;

a variable optical filter passing on only one of said wavelength components that pertains to said multiplexed signal including said added noises and has a wavelength in a pass band set in said variable optical filter;

a light-receiving unit for detecting a quality of a signal light of a particular one of said wavelength components which is output by said variable optical filter set at a pass band coinciding with a wavelength band of said particular wavelength; and

a judgment unit for forming a judgment on an error for each of said wavelength components on the basis of detection results received from said light-power-detecting units and a detection result received from said light-receiving unit.

15. A light-transmitting apparatus for multiplexing input signals into a multiplexed signal and transmitting said multiplexed signal, said light-transmitting apparatus comprising:

a plurality of receiving units for receiving said input signals from a plurality of transmission lines and for converting said input signals into optical signals having wavelengths different from each other;

a light-power-detecting unit for forming a judgment as to whether or not light powers of said optical signals output by said receiving units are abnormal;

an OSNR-detecting unit for detecting signal-to-noise ratios of said optical signals output by said receiving units and for forming a judgment as to whether or not the magnitude of a noise included in each of said optical signals is abnormal; and

a judgment unit for forming a judgment on an error for each of said optical signals on the basis of a detection result received from said light-power-detecting unit and a detection result received from said OSNR-detecting unit.

16. A light-transmitting apparatus according to claim 15, further comprising:

a plurality of couplers each used for splitting an

optical signal output by one of said receiving units; and

a plurality of optical switches each used for passing on or blocking an optical signal output by one of said couplers,

wherein:

said light-power-detecting unit forms a judgment as to whether or not a light power of an optical signal output by any one of said optical switches is abnormal; and

said OSNR-detecting unit detects a signal-to-noise ratio of an optical signal output by any one of said optical switches and forms a judgment as to whether or not the magnitude of a noise included said optical signals is abnormal.

17. A light-transmitting apparatus according to claim 16 wherein said judgment unit determines that a particular one of said optical signals has deteriorated if detection results output by said light-power-detecting unit for said optical signals are normal but a detection result output by said OSNR-detecting unit for said particular optical signal is abnormal.

18. A wavelength-division-multiplexing communication system including a first line terminal equipment, a second line terminal equipment, a plurality

of transmission paths connected to a receiving side of said first line terminal equipment and an optical transmission line connecting said first line terminal equipment to said second line terminal equipment, said wavelength-division-multiplexing communication system comprising:

a plurality of receiving units provided in said first line terminal equipment and used for receiving input signals having wavelengths different from each other from said respective transmission paths and outputting wavelength components each generated at one of said wavelengths to include an identifier;

a multiplexing unit provided in said first line terminal equipment and used for multiplexing signal lights representing said wavelength components output by said receiving units to generate a wavelength-division-multiplexed signal and for transmitting said wavelength-division-multiplexed signal to said second line terminal equipment through said optical transmission line;

a wavelength-count-detecting unit provided in said second line terminal equipment and used for detecting the number of wavelengths of wavelength components included in said wavelength-division-multiplexed signal received from said first line terminal equipment through said

optical transmission line;

a demultiplexing unit provided in said second line terminal equipment and used for demultiplexing said wavelength-division-multiplexed signal received from said first line terminal equipment through said optical transmission line into said wavelength components and for outputting said wavelength components to output terminals;

a plurality of identifier-detecting units provided in said second line terminal equipment, each associated with one of said wavelength components and used for determining whether or not an identifier set in a wavelength component having said associated wavelength is normal; and

a judgment unit provided in said second line terminal equipment and used for forming a judgment on existence of an error for each of said wavelength components on the basis of a detection result output by said wavelength-count-detecting unit and a detection result output by said identifier-detecting unit associated with said wavelength component.

19. A wavelength-division-multiplexing communication system including a first line terminal equipment, a second line terminal equipment, a plurality

of transmission paths connected to a receiving side of said first line terminal equipment and an optical transmission line connecting said first line terminal equipment to said second line terminal equipment, said wavelength-division-multiplexing communication system comprising:

a plurality of receiving units provided in said first line terminal equipment and used for receiving input signals having wavelengths different from each other from said respective transmission paths and outputting wavelength components each generated at one of said wavelengths to include an identifier;

a multiplexing unit provided in said first line terminal equipment and used for multiplexing signal lights representing said wavelength components output by said receiving units to generate a wavelength-division-multiplexed signal and for transmitting said wavelength-division-multiplexed signal to said second line terminal equipment through said optical transmission line;

a power comparator provided in said second line terminal equipment and used for comparing a light power of each of said wavelength components contained in said wavelength-division-multiplexed signal received from said first line terminal equipment through said optical

transmission line with a power of another one of said wavelength components to form a judgment as to whether or not said powers of said compared wavelength components are abnormal;

a demultiplexing unit provided in said second line terminal equipment and used for demultiplexing said wavelength-division-multiplexed signal received from said first line terminal equipment through said optical transmission line into said wavelength components and for outputting said wavelength components to output terminals;

a plurality of identifier-detecting units provided in said second line terminal equipment, each associated with one of said wavelength components and used for determining whether or not an identifier set in a wavelength component having said associated wavelength is normal; and

a judgment unit provided in said second line terminal equipment and used for forming a judgment on existence of an error for each of said wavelength components on the basis of a detection result output by said power comparator and a detection result output by said identifier-detecting unit associated with said wavelength component.